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Original Article

Assessment of knowledge about healthy heart habits in urban and rural population of Punjab after SMS campaign—A cross-sectional study

Bishav Mohan^a, Sarit Sharma^{b,*}, Shruti Sharma^c, Dinesh Kaushal^d, Bhupinder Singh^a,
Shibba Takkar^a, Naved Aslam^a, Abhishek Goyal^a, Gurpreet S. Wander^a

^a Dept of Cardiology, Hero DMC Heart Institute, and DMC & Hospital, Ludhiana, Punjab, India

^b Dept of Community Medicine, DMC & Hospital, Ludhiana, Punjab, India

^c Dept of Critical Care Medicine, DMC & Hospital, Ludhiana, Punjab, India

^d Dept of Nuclear Medicine, Hero DMC Heart Institute, and DMC & Hospital, Ludhiana, Punjab, India

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ABSTRACT

Objective: The prevalence of cardiovascular diseases (CVD) is increasing in developing countries but the awareness regarding prevention and treatment of these diseases is still low. Therefore the present study was conducted with the aim of imparting health education regarding certain changes in lifestyle and dietary habits among general population through the use of short message service (SMS) that may lead to improved knowledge about prevention of cardiovascular diseases.

Methods: This cross-sectional study was conducted over a period of seven months. In the first phase, health education messages were sent through SMS to about 40,000 individuals from urban and rural population in Punjab. Twenty eight messages were sent to each individual and hence more than eleven lakh messages were sent over a period of six months. A questionnaire containing 11 questions based on these health education SMS was generated. Every 40th individual enrolled in the study was contacted on phone, and their responses noted. The data so collected was analyzed for correct responses.

Results: Complete responses could be obtained from 800 participants (males: 561 and females: 239). The participants giving correct responses to different questions ranged from 43% to 94%. Majority of participants could retain knowledge about many aspects of healthy heart habits provided by SMS except for topics concerning foods to be avoided, target for normal BP and precautions to be taken before BP measurement.

Conclusions: Health related information imparted through SMS can act as a very effective tool for disseminating knowledge about prevention of heart diseases in general population.

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1. Background

Cardiovascular diseases (CVDs) are the leading cause of morbidity and mortality among non-communicable diseases worldwide. An increasing trend in proportional mortality attributed to cardiovascular diseases has been reported in India as well, with an increase from 20.6% deaths in 1990 to 29.0% in 2013.¹ This increase is mainly due to increase in prevalence of various modifiable risk factors of CVDs like dyslipidemias, smoking, diabetes, hypertension, abdominal obesity, psychosocial stress,

unhealthy diet, and physical inactivity. Controlling this epidemic, therefore, requires laying more emphasis on the prevention of these modifiable risk factors.² Developing nations generally lag behind in prevention of heart diseases because of lack of knowledge about risk factor prevention coupled with poor literacy rates. Creating awareness about these risk factors and spreading knowledge about their prevention should be the main target of health education programs.^{3,4}

Short message services (SMS) are a widely recognized communication method in societies, as the global outreach of the technology approaches nearly 100%. SMS can send information simultaneously to many people in real time which can be used for spreading health education messages in the community.^{5,6} Health education through text messages could encompass primordial, primary and secondary prevention by bringing changes in the

* Corresponding author at: Dept. of Community Medicine, DMC & Hospital, Civil Lines, Ludhiana, 141001, Punjab, India.

E-mail address: sarit_sharma@yahoo.com (S. Sharma).

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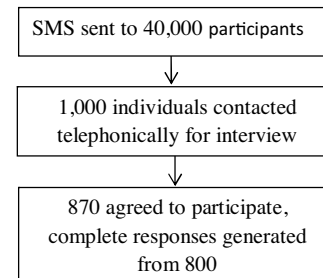
lifestyle, preventing the occurrence or slowing the progression of disease.⁷

Previous studies conducted in developed countries have emphasized that mobile related health (mhealth) interventions may improve cardiovascular-related lifestyle behaviours and disease management through interactive voice response and short message service interventions by addressing various risk factors^{7–10}, but only a few studies from the developing countries are available in the literature.⁷ Therefore the present study was planned with a goal of increasing awareness about preventable risk factors of CVDs in the community by using SMS services. The objective of the study was to assess the knowledge about healthy heart habits in urban and rural population of Punjab after providing health education through SMS campaign.

2. Methodology

The study was conducted by Hero DMC Heart Institute (HDHI), which is a part of Dayanand Medical College & Hospital (DMCH) Ludhiana, India. This was a cross-sectional study done over a period of seven months (July 2014 to January 2015). The participants included attendants of patients visiting in different departments of DMCH & three other hospitals in Ludhiana district, parents of students from five schools in urban & rural Ludhiana, members of two welfare clubs and seven voluntary organizations. Ethics clearance was taken from Institutional Ethics Committee for conducting this study and participants were enrolled after taking informed consent and explaining the purpose of the study.

First phase of the study involved sending health education messages regarding healthy heart habits to the above enrolled participants which formed a total population of about 40,000 healthy individuals aged more than 18 years from Urban and Rural population in Punjab (Appendix A). Twenty eight SMS (Appendix B) regarding prevention of heart disease were sent to each participant thus making a total of more than 11 lakh SMS sent over a period of six months. The messages focused on the role of exercise, physical activity, appropriate eating habits, adequate intake of nutrients and other health promotion strategies in the prevention of CVDs, and prevention and early diagnosis of hypertension.



The second phase of the study included assessing the recall of knowledge about healthy heart habits among the participants. A proforma containing 15 questions based on the healthy heart SMS was generated and circulated among five physicians, two cardiologists and one epidemiologist and after consensus, 11 questions were selected (Appendix C). These included six questions on modifiable risk factors of CVDs including diet, physical activity, smoking, dyslipidemia and obesity, and five questions on prevention and early detection of high Blood Pressure (BP). The questionnaire was also prepared in Hindi and Punjabi along with English so as to eliminate any translation bias. After running the SMS campaign for 6 months, every 40th individual enrolled in the study was contacted on phone to interview 1000 individuals but 870 participants agreed to participate and complete responses could be obtained from 800 participants by our data entry operators. For 70 participants, the complete data could not be collected because of discontinuation of the telephone call or the participants disconnected the call due to some other reasons and could not be contacted again. The questionnaire was administered to the participants on phone in their vernacular language. The gender and years of education of the participants was also noted. The answers were then matched to the preformed answer-key for the proforma. The collected data was analyzed using Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.).

3. Results

Out of 1000 participants contacted on phone, 870 participants agreed to respond, thus making a response rate of 87%. Complete answers could be collected from 800 participants including 561

Table 1
Knowledge of participants with respect to Gender.

Q. No.	Number of correct responses (N = 800)	Male (N = 561)	Female (N = 239)	Chi Square	P-value	Odd's Ratio (95% CI)
1.	530(66.1%)	374 (66.7%)	156 (65.3%)	0.703	0.381	0.940 (0.683–1.293)
2.	729(91.1%)	516 (92.0%)	213 (89.1%)	0.193	0.123	0.714 (0.430–1.188)
3.	409(51.1%)	281 (50.1%)	128 (53.6%)	0.369	0.206	1.149 (0.848–1.556)
4.	751(93.9%)	527 (93.9%)	224 (93.7%)	0.907	0.510	0.963 (0.515–1.804)
5.	593(74.1%)	418 (74.5%)	175 (73.2%)	0.703	0.383	0.935 (0.663–1.319)
6.	728(91.0%)	511 (91.1%)	217 (90.8%)	0.895	0.495	0.965 (0.570–1.633)
7.	487(60.9%)	347 (61.9%)	140 (58.6%)	0.385	0.215	0.872 (0.641–1.187)
8.	532(66.5%)	373 (66.5%)	159 (66.5%)	0.992	0.530	1.002 (0.727–1.381)
9.	730(91.2%)	512 (91.3%)	218 (91.2%)	0.981	0.539	0.993 (0.582–1.697)
10	345(43.1%)	250 (44.6%)	95 (39.7%)	0.208	0.119	0.821 (0.603–1.117)
11	642(80.2%)	450 (80.2%)	192 (80.3%)	0.969	0.526	1.008 (0.689–1.474)

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